The protection conferred by injections of pneumococci is looked upon as a true antitoxic immunity, and the explanation for the persistence, without apparent ill effect, of pneumococci in the blood of immunized animals is to be sought in the fact that the toxins produced by the circulating bacteria are neutralized, and at the same time the virulence of the bacteria is lessened and finally lost.

Third Report of the Caroline Brewer Croft Cancer Commission of the Harvard Medical School.—(*Journal of Medical Research*, 1905, vol. xiii., No. 2.) The first paper is by F. B. MALLORY, entitled, "A Contribution to the Classification of Tumors" (p. 113). It is the beginning of an attempt at the classification of tumors based on a more careful study of histological differentiation of cells and intercellular substances. This paper deals especially with the differentiation of tumors arising from the neuroglia, from smooth muscle, and from connective tissue; and the classification depends largely upon the characteristic fibrils produced by these tissues, both normally and in tumor cells. These fibrils are called neuroglia, myoglia, and fibroglia, according to the tissue from which they arise.

Special staining methods are used to bring out the structure of the individual fibrils and their histological differences are explained and pictured. All the fibrils touch or form part of the periphery of the cell protoplasm, but continue away from the cell in two directions, neither beginning nor ending in the cell which produced them.

The myoglia fibrils seem to run along other muscle cells or to join the fibrils formed by them, while the fibroglia and neuroglia fibrils seem to be free from the protoplasm of other cells.

Tumors arising from neuroglia, smooth muscle, or connective tissue cells are composed of cells that tend to differentiate in the same way as the corresponding normal cells do. This may be made out even in rapidly growing tumors, where the differentiation is least well marked when the tissue is properly fixed directly after removal at operation. The author considers that all tumors the cells of which tend to differentiate alike in cell and intercellular substance should be included under one heading and treated as a definite entity in order that common characteristics may be rendered prominent.

The second paper of the series is "On the Nature of the Cell Inclusions of Cancer," by ROBERT B. GREENOUGH (p. 137). The author has studied cell inclusions in 177 cases, using tissue from carcinomatous growths and from non-malignant lesions, including 23 cases of chronic cystic mastitis. The method employed was as a routine, fixation in Zenker's fluid and staining by iron hæmatoxylin (Mallory), followed by orange G and fuchsin. His own cases and those of Nösska, Nichols, and Honda, writers holding views upon this subject similar to the author, are tabulated. In the 481 tissues from both malignant and non-malignant lesions cell inclusions or Plimmer's bodies were found 217 times. In the 23 cases of chronic cystic mastitis which the author studied, cell inclusions were found in 16. They were found almost constantly in cancer of glandular origin, but were almost invariably absent in sarcoma, and do not occur in epithelioma. They were found in hypernephroma, non-cancerous lesions of the mammary gland, and occasionally in other gland epithelium in non-cancerous conditions. Various characteristics of the cell inclusions are discussed, and the author concludes that their size, structure, and staining reactions are such as to justify the assumption that they are vacuoles in the cell protoplasm containing a material which is coagulated and shrunken by the use of tissue fixatives. He considers that the vacuoles are chiefly a phenomenon of cell secretion, but are also produced by phagocytosis and by degenerations of the nucleus. Secretion vacuoles found in certain noncancerous diseases of the mammary gland occupy a position between the nucleus and the lumen of the gland. Inclusions in adenocarcinoma occupy a similar position, while in more advanced carcinoma the gland lumen is lost, so the secretion vacuoles cannot escape. They remain, therefore, within the cancer cell to undergo further increase and ultimate degeneration.

Cell inclusions are more numerous in slowly growing cancer, because, as the author thinks, the function of cell secretion is lost in progressive anaplasia of cancer cells. He finds no reason to interpret the appearances found as of parasitic origin.

A "Study of the Effects of the Roentgen Ray upon Cancer," by VOSE and HOWE (p. 167), constitutes the third paper. They studied 120 cases treated by the *x*-ray and endeavored to use conditions as similar as possible with all. Besides the action of the *x*-ray upon cancer, its effects upon the normal skin, ulcerated surfaces, and scar tissue, and its analgesic effect are discussed.

They report in detail 14 cases of various kinds. These cases include 2 of diseases of lymph nodes, 1 of tuberculosis, and 1 of Hodgkin's disease, where there was great reduction in the size of the lymph glands due, the authors believe, entirely to the counterirritation produced by the *x*-ray. The reduction of the glands was not permanent in the Hodgkin's disease case. The other 12 cases include instances of both cutaneous and deep-seated cancer. From their histological study, the authors consider that cutaneous cancer treated by the *x*-ray undergoes a degeneration not peculiar to this form of treatment or distinguishable histologically from degeneration due to other causes. The vascular changes are limited to an endarteritis, but new formation of blood-vessels occurs if healing takes place. There is an increase in elastic tissue following exposure to the *x*-ray, and after its use mitotic forms are less abundant in the tissue cells.

The authors consider this treatment limited in its value to superficial growths, for destruction and exfoliation are the only means of cure. They consider that the *x*-ray has no selective action.

"Implantation of Tissue and its Relation to Cancer," by EDWARD H. NICHOLS (p. 187), forms the last paper of the report. The author records the results of a series of implantations of tissues in 62 animals. Both adult and fetal tissues were implanted, and, although some mesenchymal tissues were made use of, the experiments were conducted chiefly with epithelium. The work was undertaken to discover whether these tissues, set free from their normal environment, would take on an unlimited growth and form metastases. Although in some cases the implanted tissues proliferated to form tumor masses, in none was there unlimited metastasis. The author discusses quite thoroughly the general arrangements for the parasitic origin of cancer and finds in none of them anything conclusive in support of this hypothesis. The blastomycetic and the protozoön theory of the causation of cancer are reviewed in the light of the experiments of the author and others, and he finds very little experimental evidence for their acceptance.

He considers that there are a considerable number of clinical and experimental facts in support of the biological theories of the origin of malignant and benign tumors, as enunciated by Thiersch, Cohnheim, and Ribbert.

From his own experiments, Nichols concludes that when certain types of epithelium (epidermis), both adult and fetal, are removed from their normal position and implanted into another part of the same animal, they can maintain their "potentiality of growth," to retain their own peculiar character, and produce nodules analogous to dermoid cysts or more complicated teratomata. Highly differentiated epithelium never retained its power of growth. The "potentiality of growth" was found to be greater in fetal than in adult tissues, but in no case was infiltration of surrounding tissues or epithelial metastases seen. Certain fetal connective tissues (cartilage) were transplanted and were found to retain their potentiality of growth. The transplanted fetal tissues were found to have a tendency to reproduce the ultimate stage of their development, and not that stage at which they were transplanted.

The Agglutination of Paratyphoid Bacilli and Closely Allied Bacteria by the Serum of Typhoid Patients.—GRÜNBERG and ROLLY (*Münch. med. Wochenschrift*, 1905, No. 3, p. 105) have tested the agglutinating action of the serum from 40 cases of typhoid fever upon bacillus paratyphi types "a" and "b," bacillus coli, bacillus enteriditis (Gärtner), and bacillus botulinus. The diagnosis of typhoid fever was assured in 32 instances (80 per cent.) by a growth of typhoid bacilli from the blood during the attack of fever, while in the remaining cases, the typical course of the disease left no doubt as to the diagnosis. In 70 per cent. of the cases paratyphoid bacilli, as well as typhoid bacilli, were agglutinated, and in 35 per cent. of the cases the reaction occurred in higher dilutions with paratyphoid bacilli than with the typhoid bacillus. The possibility of a mixed infection by the two types of bacteria can be practically excluded, and the authors agree with Jürgens in considering the phenomenon as a group agglutination.

In 12 out of 22 cases (55 per cent.) bacillus coli was agglutinated, usually in low dilutions, but since Pfaundler has already shown that bacillus coli may react with the serum of normal individuals, the authors do not consider that their results with this organism are of great significance.

Agglutination was quite constant with bacillus enteriditis, but took place only three times with bacillus botulinus. As a result of these investigations the authors conclude that the Gruber-Widal reaction is not a highly specific phenomenon, since, under certain conditions, the serum of typhoid fever patients may agglutinate bacilli nearly related to bacillus typhosus, even in higher dilutions than the typhoid bacillus itself.

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